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MEASUREMENTS OF *Pipilo fuscus crissalis*.

	Mm. Wing.	Mm. Tail.	Mm. Culmen.	Mm. Height of Bill.	Mm. Tarsus.
Aver. of 13 males from Central Cal.,	99.5	127.5	14.5	8.2	28.3
Max. " 13 " " " "	107	136	16	9	30.5
Min. " 13 " " " "	94	119	12	8	27
Aver. " 14 females " " "	92.6	120.3	13.68	8.5	24.7
Max. " 14 " " " "	99	129	15	9.5	30
Min. " 14 " " " "	83	110	13	8	27
1 female, Kern County, California,	92	121	14.8	9.5	29

MEASUREMENTS OF *Pipilo fuscus senicula*.

	Mm. Wing.	Mm. Tail.	Mm. Culmen.	Mm. Height of Bill.	Mm. Tarsus.
Aver. of 9 males from Southern Cal.,	90.6	115.7	13.7	8.7	27
Max. " 9 " " " "	93	119	14.5	9	28
Min. " 9 " " " "	89	111	13	8	26.5
Aver. " 6 females " " "	85.33	110.87	13	8.3	25
Max. " 6 " " " "	89	115	14	8.8	26
Min. " 6 " " " "	82	106	12	8	24.5
Aver. " 11 males " Lower " "	87	113	13.08	8.08	26
Max. " 11 " " " "	94	120	14	9	27.5
Min. " 11 " " " "	83	105	13	8	25
Aver. " 4 females " " "	84.5	107.25	13.75	8.5	26
Max. " 4 " " " "	87	113	14	9	26.5
Min. " 4 " " " "	83	105	13	8	25.5

SWAINSON'S] WARBLER AN INHABITANT OF THE
SWAMPY WOODS OF SOUTHEAST-
ERN MISSOURI.

BY O. WIDMANN.

WHEN we look at a map of the State of Missouri we see that its southern boundary is the parallel of $36^{\circ} 30'$, except at its eastern corner, where we find a curious appendix in the shape of a rhomb, which reaches southward thirty-four miles or half a

degree of latitude, with its southern line resting upon the 36th parallel. This annex is sometimes called the peninsula of Missouri; it contains approximately one thousand square miles and constitutes, therefore, only a small (the sixty-eighth) part of the State; but, though territorially so small, considered from the standpoint of the naturalist it is a very important and valuable addition.

In establishing the boundary line between Missouri and Arkansas it was at first intended to run it all along the parallel of $36^{\circ} 30'$ to the Mississippi River, but the early settlers of the peninsula strongly opposed the political separation from Missouri on the very good reason that they were entirely cut off from the State of Arkansas by impassable swamps while a few ridges with wagon roads connected them with Missouri. For eight months of the year about one-half of the peninsula is under water and the dry land is cut up into a number of islands of all sizes, separated by a network of sloughs and cross-sloughs. The main sloughs run north and south and carry not only the precipitation of the region, but they are also fed by the highwaters of the Mississippi in the east, the Francis in the west, and the Little River in the centre. With the exception of a few narrow ridges, called prairies, running north and south between these rivers, the whole territory is still covered with the original forest, and the comparatively small clearings and deadenings, made for farming purposes on the higher levels of the islands, have not yet changed the woodland character of the region. Even the rivers and sloughs are not free from trees, except in the so-called openings or lakes. Leaving only a narrow channel, there are scattered through the water magnificent cypresses, picturesque tupelos, clusters of waterelms (*Planera*), elbowwood covered with buckvine, flanked by acres upon acres of flags, which in turn are bordered by wide belts of smartweed, patches of *Nelumbium*, *Nymphaea*, and other aquatic plants. Adjoining the slough, the true home of the cypress and tupelo, is the land of the sweet gum, a tree of formidable size, often over a hundred feet high, with sour gum, hackberry, sycamore, gigantic willows, swamp chestnut oak (cow oak), ash, soft maple, sassafras, mulberry, boxelder, holly, and, as undergrowth, waterbeech (*Carpinus*), dogwood, redbud,

and a variety of small trees and shrubs, as well as climbers, among which we notice with delight the beautiful crossvine and wistaria.

It was on May 12, 1894, when I entered these woods at the southwest corner of the peninsula, crossing the St. Francis and ascending Indian Slough in a skiff about two miles. After walking one mile across an island, I came upon a cross-slough about one hundred yards wide. It had to be waded. It was one o'clock and very warm. I had quite a load to carry and thought it would be best to rest a little. I had just laid down my burden and was in the act of wiping the perspiration from the forehead, when a voice, the voice of a Redbird, rang out, clear and distinctly, "*Hard work, work, work, work, work, hard work!*" I still wondered how he knew it was hard work to carry such an outfit on an ornithological reconnaissance, when over the slough a large bird darted, apparently a Pileated Woodpecker or Good God, as the people call it there; but did it not show an extraordinary amount of white, almost as much as a Redhead? Could it be the long sought for Ivorybill? I concluded not to go on, as intended, but to stay in the vicinity and to keep a sharp look-out; possibly I might get another and better chance for identification. I waited.

In the course of the afternoon I saw nearly the whole feathered population of the neighborhood, watched their doings and listened to their songs. Among other things I had again opportunity to witness a singular act of the Yellow-billed Cuckoo, which I had repeatedly noticed the preceding few days. The female at this particular period of her life and love seems to care little for other food than that which her courteous and attentive mate provides for her. She keeps quietly sitting in all her loveliness, as if lost in pleasant reverie, patiently awaiting his return. In the exuberance of his affection instead of taking a seat at her side, as other birds would do, he gracefully alights on her shoulders, slightly spreads his wings as if in embrace, bends forward over her head and puts into her open bill the tender willow-fly, an Ephemera of larger size.

It was not Sunday, but all birds seemed to wear their best dresses. I observed a male Red-belly, who was not only red-bellied, but really red-throated, red-chinned and red-cheeked.

A Kentucky Warbler had the triangular black patch from behind the eye down the sides of the neck continued in a half-circle so as to almost meet its fellow on the breast.

A Canada Flycatching Warbler wore a real substantial black collar, not merely the series of spots they usually have on the breast.

At one time I heard a great commotion among birds a little way off and on investigation I noticed a snake (*Coluber lindheimeri*) go up the trunk of a chestnut oak. The bark of this tree is pretty scaly and the snake could not so easily find a hold; she had to try to the right and to the left to find a point which would support her, but nevertheless she managed to go up at the rate of one foot a minute. A Downy Woodpecker, a Flicker, and a pair of Summer Tanagers were greatly agitated by her presence; and she was now twenty feet up the tree, when suddenly the angry *killikanik* of the Sparrow Hawk came nearer and nearer, and turning around I saw an old Redshoulder, chased by a male Sparrow Hawk, come down the slough at a lively rate. The Redshoulder, not seeing me, alighted within twenty yards, but the Sparrow Hawk passed by and disappeared. Turning to my snakeship, she also had disappeared and could not be seen again, high or low. It was now four o'clock and I was just going to give up waiting for the return of the Ivorybill phantom, when all at once a novel song came from a papaw thicket about a hundred yards up the slough. Its novelty struck me at once with the hope, nay, with the certainty, that it meant a prize. It opened à la *Seiurus motacilla* and ended à la *S. noveboracensis*. It was no *Oporornis*, no *Geothlypis*, no this, no that—in short, it could be nothing else but *Helinaia*, though the surroundings did not exactly fit the canebrake dweller of the sunny South. *Helinaia* here in this dark, deep wood, where the cypress and the sweet gum join their lofty branches, where under a canopy of hornbeam, ash and dogwood, and a thick undergrowth of papaw, hazel, spicebush (*Lindera*) and Hercules club (*Aralia spinosa*) interwoven with bamboo vine (*Smilax*) and muscadine, the ground is covered with a veil of perpetual gloom.

It took me considerable time to locate and to get a good look at the originator of the strange song, but at last I found him,

comfortably seated on a dry limb of a dogwood some fourteen feet above ground. He had doubtlessly been sitting there ever since I first heard him and took no pains at concealment. I had him now in good light, fixed my Lemaitre upon him, and had an excellent view of him. There he was in life size just as Brewster painted him for us some nine years ago. Every few seconds he would lay back his head until the bill pointed vertically up, and with ease, but earnestness, render his famous little song. Evidently some sort of inspiration was upon him, and I wondered how many times he would say his lesson. I timed him again and again, seven and eight times a minute was his rate all the time. When approached too close he would fly to another small tree a few rods off and sing again.

He kept singing and I kept looking for his nest, until the sun cast long and deep shadows through the lonely forest. He had said his lesson about a thousand times now, but I had to console myself that if he had a nest it must be on the ground or somewhere. On the following day when I passed the place at 7 A. M. he was singing again, but this time I did not stop but crossed the slough and penetrated deeper into the dark recesses of an almost unsettled region. After walking half a mile I came upon another slough called Seneca Slough, a broad sheet of water entirely covered with aquatic plants, mostly smartweed, and beautifully ornamented with giant cypresses and senile tupelos, whose decapitated hollow trunks, resembling chimneys, serve Swifts for roosts and probably for nests.

In the willows at the bank a Philadelphia Vireo sang its modest song, but never got farther than the first three syllables. On the dry arm of a mighty cypress perched a beauty: a Swallow-tailed Kite! She had come to preen her feathers on this lofty perch. Her dark brown eye wandered for a moment over the environs but her scanning did not reveal my presence. I think she came directly from her nest, since a violent shaking of her body preceded all farther operations of her morning toilet, which took her just ten minutes. Another vigorous shaking of her body and off she went to whence she came.

I marched four miles from there that day and the now well-known notes of the Swainson's Warbler reached my ears four

times, coming from thickets like the first, but farther away from sloughs, though not from water, since these woods are full of pools of all sizes and depths.

The soil of the St. Francis basin is a light sand, several feet in depth, resting on a clayey subsoil. It is a peculiarity of the trees of this region, especially the sweet gum (*Liquidambar styraciflua*) to rot at the point where sand and clay touch. In this condition the tree is easily blown over, and in its fall the roots take up the surface soil, causing an excavation a few feet deep and several yards wide, a convenient receptacle for the water, a miniature pond with impermeable bottom. Such pools are scattered in countless numbers throughout the woods on the higher levels, while all depressions are naturally of a very swampy character.

In such woods the Water Thrush is not confined to the water courses as in other parts of Missouri, but is found in every part of the wood; so are the Prothonotary, the Parula, the Cerulean, and apparently also the Swainson Warblers. It is here that the Ovenbird, the Pipilo, the Blue-winged Yellow Warbler and the Catbird are restricted to the oases of high ground, while the Hooded and Kentucky Warblers, the Maryland Yellowthroat, and especially the White-eyed Vireo, are at home and abundant on high as well as on low ground, the two last named even in the slough itself.

From a week's tramp through the region I came to regard the Swainson Warbler as a regular, though not common, denizen of the swampy woods of Dunklin County, Missouri.

BIRD MIGRATION AT GRINNELL, IOWA.

BY LYND'S JONES.

I. SPRING MIGRATION.

EVER since the inauguration of systematic study of bird migration by Prof. W. W. Cooke in 1884, it has been my purpose to collect sufficient data to determine the sequence of arrival of the various migratory birds at Grinnell, Iowa, where